

Arkema Facility - Harvey Response

Crosby, TX

Arkema Inc.

September 7, 2017

Project #109489 Summary

1.0 Introduction

As a result of flooding events related to Hurricane Harvey, the Arkema facility located in Crosby, TX suffered a loss of power and failure on refrigeration of manufacturing process. The loss of temperature control resulted in degradation and heating of organic peroxides, with the potential of creating a fire. As a precautionary measure, local authorities established a 1.5-mile radius evacuation zone around the facility.

On August 31, 2017, the Center for Toxicology and Environmental Health, LLC (CTEH®) was contacted by Arkema Inc. (Arkema) to initiate air monitoring and sampling around the community areas outside of the evacuation zone perimeter. This submittal summarizes the results of real-time air monitoring conducted by CTEH® personnel from 06:00 on September 6, 2017 to 06:00 on September 7, 2017. A map of the site location is provided in **Attachment A**.

2.0 Real-time Air Monitoring

All real-time air monitoring instrumentation was calibrated per the manufacturer's recommendations prior to air monitoring. Handheld, real-time air monitoring was conducted for oxygen (O₂) and volatile organic compounds (VOCs) using RAE Systems MultiRAE instruments. Additionally, particulate matter (PM_{2.5}) was assessed using TSI SidePak AM510s. **Table 1** summarizes the data for all real-time air monitoring readings recorded in the Crosby, TX Community from 06:00 on September 6, 2017 through 06:00 on September 7, 2017 and Table 2 summarizes the Worker Activity real-time air monitoring readings from within the site boundary for the same period. Maps of real-time air monitoring locations are provided as **Attachment B**.

Table 1 Community Real-time Handheld Air Monitoring Readings
06:00 September 6, 2017 – 06:00 September 7, 2017

Analyte	Instrument	Number of Readings	Number of Detections	Range of Detections*
PM _{2.5}	AM510	85	85	0.012 - 0.320 mg/m ³
VOCs	MultiRAE	86	0	< 0.1 ppm

*If detections were not observed, the instrument detection limit is listed in this column.

Table 2 Worker Activity Real-time Handheld Air Monitoring Readings
06:00 September 6, 2017 – 06:00 September 7, 2017

Analyte	Instrument	Number of Readings	Number of Detections	Range of Detections*
O ₂	MultiRAE	13	13	20.9 %
VOCs	MultiRAE	51	2	0.4 - 3.3 ppm

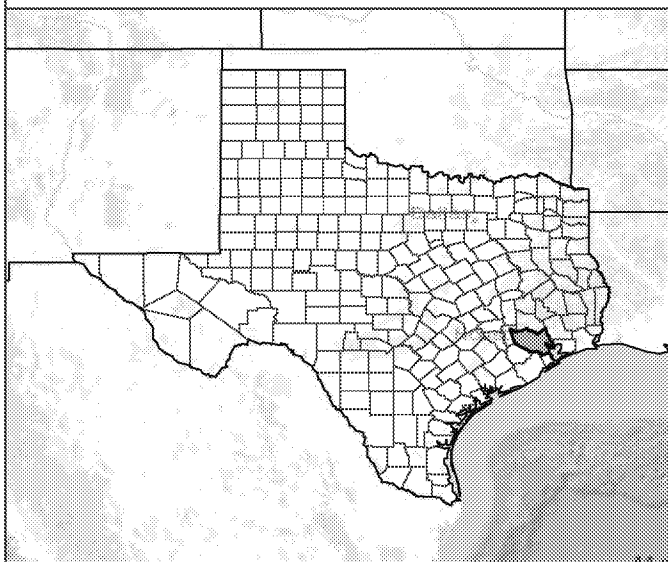
*If detections were not observed, the instrument detection limit is listed in this column.

3.0 Analytical Air Sampling

To supplement real-time air monitoring, CTEH® deployed areas along the perimeter of the evacuated area within the community. Evacuated canister (Minican™) samplers were regulated to collect air evenly over a 24-hr period. Analytical air samples will be submitted to SGS Galson Laboratories, an AIHA-accredited laboratory, for analysis using EPA Method TO-15. A map highlighting the analytical air sampling locations is provided as **Attachment C**. Analytical Air Sampling Results will be reported upon receipt from the laboratory.

Attachment A

Site Location Map



Attachment B

Handheld Real-time Air Monitoring Locations

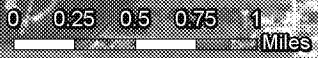


Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 6, 2017 to 06:00 September 7, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



Legend

- Site
- Real Time Reading



Community PM2.5 Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 6, 2017 to 06:00 September 7, 2017



Project: 109489

Client: Arkema

City: Crosby, TX

County: Harris



Legend

PM2.5 Real Time Reading Location

Site



Community VOC Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 6, 2017 to 06:00 September 7, 2017

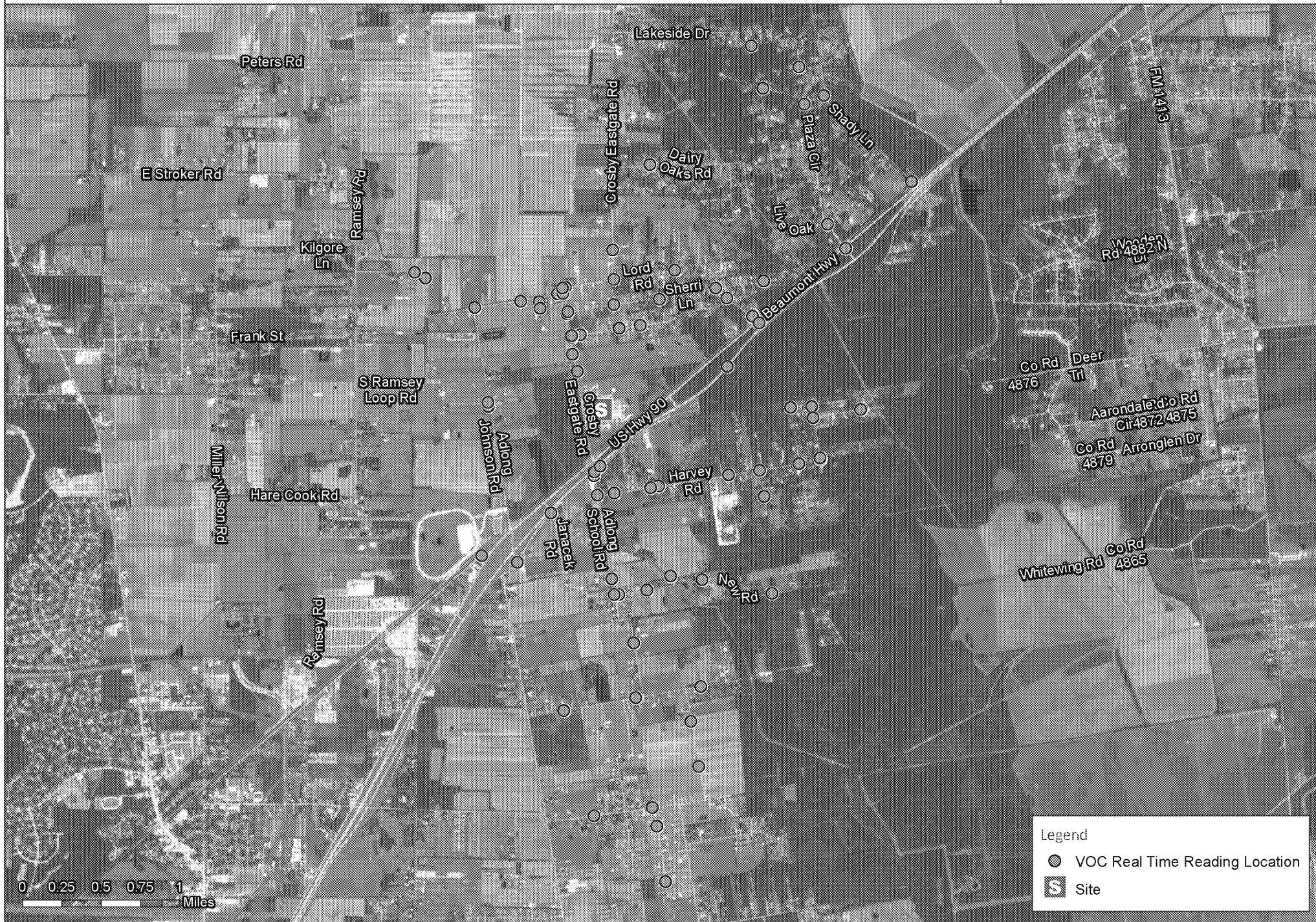


Project: 109489

Client: Arkema

City: Crosby, TX

County: Harris



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/7/2017 6:07:13 PM



Oxygen Hand-held Real-time Reading Locations - Worker Activity

Harvey Response - 06:00 September 6, 2017 to 06:00 September 7, 2017



Project: 109489

Client: Arkema

City: Crosby, TX

County: Harris



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/7/2017 6:29:25 PM



VOC Hand-held Real-time Reading Locations - Worker Activity

Harvey Response - 06:00 September 6, 2017 to 06:00 September 7, 2017



Project: 109489

Client: Arkema

City: Crosby, TX

County: Harris



Legend

- ▲ VOC Detect (1.7 - 3.3 ppm)
- VOC Real Time Reading Location
- S Site

PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/7/2017 6:12:16 PM

Attachment C

Map of Analytical Air Sampling Locations



Analytical Air Monitoring Station Locations as of September 7, 2017

Harvey Response



Project: 109458
Client: Arkema
City: Crosby, TX
County: Harris

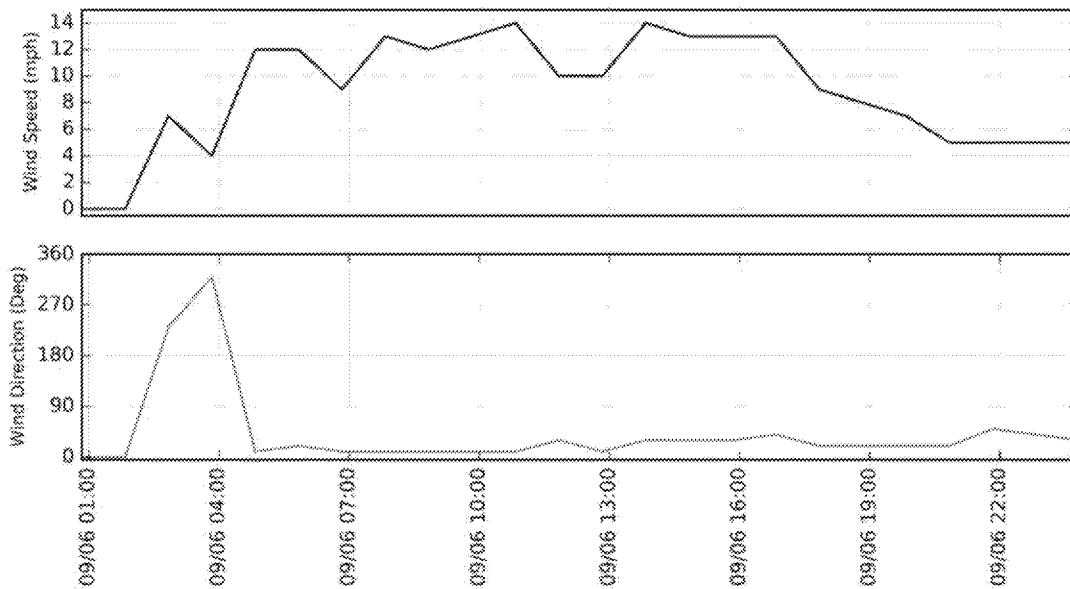
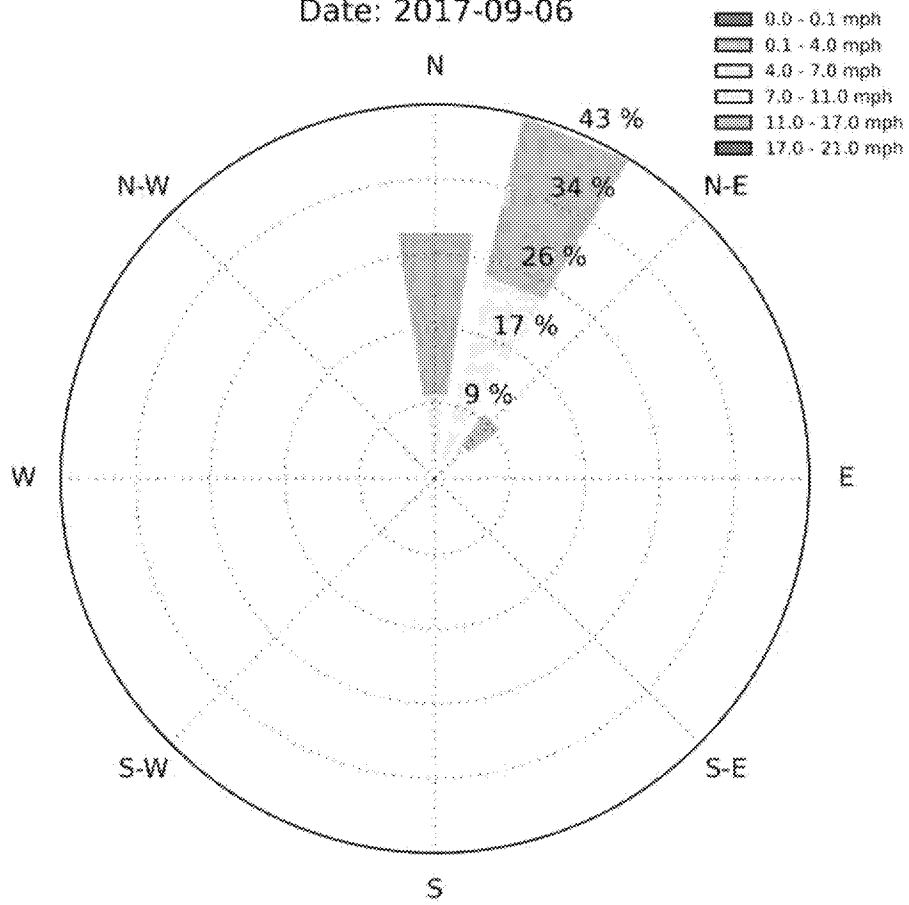


Attachment D

KHPY Windrose

(Highland Park Airport - 12.5 miles SSE of Site)

Weather Station: KHPY
Date: 2017-09-06



Weather Station: KHPY
Date: 2017-09-07

